LAW OFFICES
KELLER AND HECKMAN LLP
1001 G STREET, N.W.
SUITE 500 WEST
WASHINGTON, D.C. 20001
TELEPHONE (202) 434-4100
FACSIMILE (202) 434-4646

BOULEVARD LOUIS SCHMIDT 87
B-1040 BRUSSELS
TELEPHONE 32(2) 732 52 80
FACSIMILE 32(2) 732 53 92

February 4, 1997

(202) 434-4129
reardon@khlaw.com

EX PARTE OR LATE FILED

William F. Caton, Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: IB Docket No. 96-220:
Little LEO Licensing Proceeding;
Ex Parte Meeting

Dear Mr. Caton:

The purpose of this letter is to provide notice that on February 4, 1997, the following individuals met with Ruth Milkman and Paula Ford of the Commission's International Bureau to discuss the above-captioned proceeding: Wayne V. Black and John Reardon on behalf of the American Petroleum Institute.

Our discussion concerned the Commission's proposal to allocate the 459.000-460.000 MHz band to Little LEOs. As Petroleum Radio Service eligibles, API members strongly oppose reallocation or sharing of the oil spill response and clean up channel centered at 459.000 MHz. In order to protect lives and guard against damage to the environment and property, the oil spill response and clean up channel should remain inaccessible to Little LEOs.

Should the Commission require further information, it is respectfully requested to contact the undersigned at (202) 434-4129.

Sincerely,

John Reardon

Enclosures

cc: Ms. Ruth Milkman
Ms. Paula H. Ford

Concerns Of Petroleum Radio Service Entities

- Effective Communications Are Essential To Oil Spill Response And Clean Up Operations.

- There Is No Demonstrated Need For Sharing Or Reallocating The 459.000-460.000 MHz Band To Little LEOs.

- Little LEO Proponents Have Failed To Prove That Little LEOs Can Share Spectrum With Land Mobile Radio Service Users. Dynamic Channel Allocation Is Based Upon A Flawed Theory And Has Never Been Demonstrated To Work.

- The 459.000 MHz Band Is Unsuitable For Little LEOs Because WRC-95 Did Not Designate A Corresponding Downlink.

- If The Commission Determines That Little LEOs Do In Fact Need An Allocation In The 459.000 MHz Range, The FCC Should Protect The Oil Spill Channel By Excluding The Band 459.000-459.050 MHz.

- If The FCC Nonetheless Allocates The Entire 459.000 MHz Band To Little LEOs, It Should Include The Strict Limitations Adopted At WRC-95. Thus, Little LEOs Would Not Be Permitted To Constrain The Development And Use Of Fixed And Mobile Services; Nor Cause Harmful Interference; Nor Claim Protection From Fixed And Mobile Services.

FINAL ACTS

WRC-95

Final Acts of the World Radiocommunication Conference (WRC-95)

Geneva, 1995

MHz
430 – 470

Allocation to Services		
Region 1	Region 2	Region 3
430 – 440 AMATEUR RADIOLOCATION S5.138 S5.271 S5.272 S5.273 S5.274 S5.275 S5.276 S5.277 S5.280 S5.281 S5.282 S5.283	**430 – 440** RADIOLOCATION Amateur S5.271 S5.276 S5.277 S5.278 S5.279 S5.281 S5.282	
440 – 450 FIXED MOBILE except aeronautical mobile Radiolocation S5.268 S5.270 S5.271 S5.284 S5.285 S5.286		
450 – 455 FIXED MOBILE S5.271 S5.286		
455 – 456 FIXED MOBILE S5.271 S5.286B	**455 – 456** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.209 S5.271A S5.286A S5.286B S5.271	**455 – 456** FIXED MOBILE S5.271 S5.286B
456 – 459 FIXED MOBILE S5.271 S5.287 S5.288		
459 – 460 FIXED MOBILE S5.271 S5.286B	**459 – 460** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.209 S5.271A S5.286A S5.286B S5.271	**459 – 460** FIXED MOBILE S5.271 S5.286B
460 – 470 FIXED MOBILE Meteorological-Satellite (space-to-Earth) S5.287 S5.288 S5.289 S5.290		

MOD

MOD

MOD **S5.280** In Germany, Austria, Bosnia and Herzegovina, Croatia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Portugal, Slovenia, Switzerland and Yugoslavia, the band 433.05 - 434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **S15.13**.

NOC **S5.281** *Additional allocation:* in the French Overseas Departments in Region 2 and India, the band 433.75 - 434.25 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis. In France and in Brazil, the band is allocated to the same service on a secondary basis.

NOC **S5.282** In the bands 435 - 438 MHz, 1 260 - 1 270 MHz, 2 400 - 2 450 MHz, 3 400 - 3 410 MHz (in Regions 2 and 3 only) and 5 650 - 5 670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No. **S5.43**). Administrations authorizing such use shall ensure that any harmful interference caused by emissions from a station in the amateur-satellite service is immediately eliminated in accordance with the provisions of No. **S25.11**. The use of the bands 1 260 - 1 270 MHz and 5 650 - 5 670 MHz by the amateur-satellite service is limited to the Earth-to-space direction.

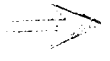
NOC **S5.283** *Additional allocation:* in Austria, the band 438 - 440 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD **S5.284** *Additional allocation:* in Canada, the band 440 - 450 MHz is also allocated to the amateur service on a secondary basis.

NOC **S5.285** *Different category of service:* in Canada, the allocation of the band 440 - 450 MHz to the radiolocation service is on a primary basis (see No. **S5.33**).

MOD **S5.286** The band 449.75 - 450.25 MHz may be used for the space operation service (Earth-to-space) and the space research service (Earth-to-space), subject to agreement obtained under No. **S9.21**.

ADD S5.286A Stations in the mobile-satellite service in the bands 455 - 456 MHz and 459 - 460 MHz shall not constrain the development and use of the fixed and mobile services.



ADD S5.286B Stations in the mobile-satellite service in the bands 455 - 456 MHz and 459 - 460 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services.

INFORMAL WORKING GROUP 2A - NGSO MSS BELOW 1 GHz
PRELIMINARY REPORT

EXECUTIVE SUMMARY

The use of NGSO MSS in frequencies below 1 GHz ("Little LEOs") enables the provision of worldwide data communications services with a relatively modest network infrastucture cost, technical complexity, and relatively low terminal equipment costs. At the 1995 World Radiocommunication Conference, (WRC-95) administrations expressed considerable interest in allocating additional spectrum for Little LEOs below 1 Ghz on a world-wide basis. During WRC-95 it was agreed, in principle, that additional frequency bands should be allocated on the condition that current and future terrestrial radiocommunication services, and in particular mobile services, could be guaranteed to operate without interference . This preliminary draft report addresses the work and activities of Informal Working Group 2A relating to NGSO MSS sharing with existing systems and services below 1 Ghz, in preparation for WRC-97.

o Chapter 1 of the report highlights the work mandate of IWG-2A, outlines the methodology used in considering additional spectrum proposals and describes the WRC-95 experience.

o Chapter 2 of the report provides an examination of the requirements, the demand and growth for NVNG services, current network applications within the United States and abroad, and any additional spectrum requirements for NGSO MSS services operating below l Ghz

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o Chapter 3 of the report examines existing allocations, regulatory constraints, and provides proposals.

o Chapter 4 of the report contains a summary of the analyses, constraints, interference mitigation techniques, empirieal results and feasibility studies of NGSO MSS sharing with other existing systems and services below 1 Ghz. The chapter oulines the NGSO system characteristics, and summarizes sharing studies among NGSO MSS networks, with terrestrial systems, with the mobile service, with the meteorological satellite service, with the radio navigation satellite service, with the space operations service, with the fixed service, with the meteorological aids service, and with the broadcasting service (video). It also provides a section on protection of the radio astronomy service.

o Chapter 5 will consider international views for WRC 97, including Canada & Mexico, CITEL, CEPT, Japan, as these are developed.

o Chapter 6 summarizes allocation proposalss, including revisions to existing allocations and new allocations.

Arguments in Opposition to NVNG Sharing with Terrestrial Mobile Services

Proponents of NVNG MSS below 1 GHz recently have urged the U.S. to adopt and promote two allocation proposals: one for uplink frequencies at 450-470 MHz and another for downlink spectrum at 470-806 MHz. Neither allocation should be forwarded to the full IAC, nor proposed by the United States for the WRC-97.

There is no consensus supporting the NVNG MSS proponents' recommendation because there remains substantial disagreement over the ability of MSS and terrestrial mobile systems to share spectrum. The task of the IWG-2A subgroup is to develop consensus for proposals that can form the backbone of the U.S. position. Although several other proposals of IWG-2A have achieved consensus -- most recently, a proposal for feeder link allocations -- there has been no agreement on the foregoing two allocations proposals.

The root cause for the lack of consensus is that the proposal to allocate the 450-470 MHz band for MSS uplinks is unsupported by technical sharing studies. Contrary to the statement in the recent output document from 8D (8D/Temp/131(Rev.1)), the allocation proponents have never actually tested a system in the 450 MHz band. Rather, data has been accumulated at 149 MHz and extrapolated to 450 MHz and other land mobile bands. However, the 149 MHz band is a more lightly used government band that utilizes simplex systems as opposed to the half duplex, mobile relay stations employed at UHF frequencies. Simply put, government land mobile use at 149 MHz is quite different than operations at 450 MHz and other UHF frequency bands (see IWG-2A/28 (Rev. 1); IWG-2A/66).

Lacking test data, the MSS proponents attempt to substitute theoretical analysis and simulations. These theoretical analysis do not adequately support an allocation at 450-470 MHz. In the first instance, some MSS proponents state that dynamic channel assignment techniques (the DCAAS system) will reduce interference by ensuring that MSS systems will avoid operations on terrestrial channels that are in use. Motorola remains unconvinced about the efficacy of DCAAS technology. The DCAAS receivers will be located on board the satellite searching for vacant channels on which earth-bound MES units may transmit. The field of view of the DCAAS receiver, however, exceeds CONUS (the Final Analysis footprint is over 3,500 miles in diameter), meaning that they are looking for channels that are unused at any location over an area as large as

the entire United States. Given the occupancy of the private land mobile bands at 450 MHz, the probability of this occurring is effectively zero. Moreover, information received at the satellite will be skewed by Doppler shift (as much as 10 kHz (IWG-2A/57 at 12)); although NVNG proponents claim that have accounted for Doppler, their paper is devoid of details as to how this might be accomplished.[11]

MSS proponents also present simulations (IWG-2A/59(Rev.2)) that claim that even if DCAAS does not properly function, the potential for interference is sufficiently low to permit sharing. This study does not accurately model the characteristics of the private land mobile bands near 450 MHz. First, contrary to the study's assumptions, worldwide, the band is used by both mobiles and fixed mobile relay stations. The interference potential to individual mobile relay stations is far greater than mobile transceivers because (1) mobile relay receive antennas are generally located at much higher elevations (commonly up to 200 meters above ground) and (2) mobile relay receive antennas operate with much higher gain than mobile transceivers. This results in an approximate 30 dB increase in received interference power. The MSS proponents have never adequately addressed the interference potential to mobile relay stations other than to note that "different simulations will yield different results."

Second, mobile relays will retransmit any interference received to the multiple mobile units that operate through the relays. Thus, any interference event experienced by a repeater will be multiplied by transmission to a number of mobiles over a wide area. Third, the report failed to consider the effects of terrestrial system analog squelch circuits, which tend to lengthen the duration of any interference event. Each of these characteristics will negatively affect the results of the submitted interference studies and have been known to the authors of that report for months. No modifications to these studies have been made.

Even if the existing studies did accurately reflect actual terrestrial system characteristics, the NVNG MSS study itself shows that sharing is impossible in this band due to the intensive use of the spectrum. The study concludes that, even at the slowest contemplated data rate (2.4 kbps), and reaching only one third of capacity, a single MSS system can share 5 MHz with only 170,000 terrestrial transmitters if each transmitter has traffic of 0.01 erlangs, rising to

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[11] Indeed, the NVNG proponents' appear to assume substantial computational power at the spacecraft both to scan over 20 MHz with sufficient sensitivity to detect co-channel signals, and to do so in an extremely short period of time (under 0.5 seconds), and further to determine the appropriate Doppler shift either at the ground or in space.

570,000 if each unit transmits as little as 0.003 erlangs. IWG-2A/83 at 7. The land mobile community has provided information that estimates the density in the private land mobile bands as exceeding 2,425,000 transmitters per 5 MHz. The land mobile community has also provided the results of empirical studies that estimate average busy hour load at 0.006 erlangs per unit (noting that at least 50-100 units share a 25 kHz channel in each location). IWG-2A/28(Rev.1) at 8. NVNG proponents themselves admit to even higher channel usage, of 0.0083 erlangs, in Germany. IWG-2A/83 at 6. Utilizing the tables contained in the NVNG MSS study, the MSS proponents estimate that, at 0.006 erlangs, they can share with approximately 400,000 transmitters per 5 MHz. The actual density of transmitters in the 450 MHz band thus would not permit a viable

[redacted]

could operate in the band despite the fact that several NVNG MSS proponents plan just such systems.

For all the foregoing reasons, the NVNG proponents have not established cogent and logical reasons to obtain access to 450-470 MHz. Absent a valid syllogism, the U.S. cannot submit such an allocation proposal.

Nor is the MSS proponents' other allocation proposal (IWG-2A/86) any more substantiated. Essentially, the NVNG proponents request the U.S., and the ITU, to allocate virtually all spectrum between 400 and 800 MHz, and let the satellite operators determine which band to use. All told, the MSS proponents request nearly 400 MHz, despite tendering a demand study -- itself questionable -- that demonstrates a need only for 21 MHz.

Never before has the U.S. -- or any other country -- submitted such an open-ended allocation proposal, and there are numerous reasons to believe that this approach will not succeed. First, it is simply not credible to make an allocation to a service only to have its licensees promise, essentially, that they will not use the band. Types of services are given specific allocations, not broad general

direction to use the entire table of allocations. Instead, the MSS plan amounts to a delegation of frequency allocation responsibility to the satellite operators, which is likely to be particularly unpopular. Second, even if such a plan could be enforced, it would necessitate spacecraft design permitting transmission and reception over hundreds of megahertz, which would drive up the cost of NVNG MSS systems to uneconomical levels. Third, the NVNG MSS proponents have provided neither protection/coordination criteria, showing how they will choose what spectrum they will use, nor an "exit strategy" setting forth the unforseen interference conditions under which they would abandon spectrum. In total, the proposal is not likely to persuade U.S. allies, much less other countries, at the WRC. Such a plan could even undercut U.S. credibility in other, critical positions at the upcoming WRC.

For the foregoing reasons, Motorola recommends that the IWG-2A not forward the above-mentioned allocation proposals to the full IAC.